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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/713,633	11/14/2000	Ramarathnam Venkatesan	MS1-650US	3022
22801	7590	03/04/2004	EXAMINER	
LEE & HAYES PLLC 421 W RIVERSIDE AVENUE SUITE 500 SPOKANE, WA 99201			GROSS, KENNETH A	
			ART UNIT	PAPER NUMBER
			2122	7

DATE MAILED: 03/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/713,633

Applicant(s)

VENKATESAN ET AL.

Examiner

Kenneth A Gross

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 and 18-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 18-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Applicant's election without traverse of Claims 1-15 and 18-22 in Paper No. 6 is acknowledged. Remaining Claims 1-15 and 18-22 are presented for examination.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 9 and 13-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically, Claims 9 and 13 contain the limitation "d-label matching blocks between first and second CFG representations". It is unclear what it means to "d-label match blocks" in the context of this claim. Does this mean attempting to match two blocks by comparing their d-label? If so, this should be specified clearly in the claim. Claim 13 recites the limitation "the labels of the blocks" on Page 51, line 2. There is insufficient antecedent basis for this limitation in the claim. Claims 14 and 15 are rejected for being dependent on a rejected parent Claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-4, 7, 11, 12, and 18-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Schweitz et al. (U.S. Patent Number 6,594,822).

In regard to Claim 1, Schweitz teaches: (1) obtaining a first and second control flow graph representation of the first and second binary (Figure 2, item 150 and 155); (2) comparing the first and second CFG's to identify blocks that match in the first and second CFG's, thereby identifying blocks that do not match in the first CGG (Column 4, lines 28-29).; (3) determining edit-operations that merges the unmatched blocks into the first CFG so that the first CFG is identical to the second CFG (Column 4, lines 29-32); (4) producing a delta comprising the unmatched blocks and the edit-operations (Column 4, lines 11-15).

In regard to Claim 2, Schweitz teaches delivering the delta through a network (Column 1, lines 58-60).

In regard to Claim 3, Schweitz teaches patching the copy of the first program binary so that the copy is substantially identical to the second program binary, where the delta guides the patching (Column 1, lines 25-28).

In regard to Claim 4, Schweitz teaches matching blocks across the first and second CFG representations upon blocks being compared (Figure 3C). Schweitz does teach comparing all blocks of a graph, and thus neighborhoods of blocks are compared.

In regard to Claim 6, Schweitz teaches a medium for carrying out said steps recited in Claim 1 (Column 14, lines 1-25).

In regard to Claim 7, Schweitz teaches a medium for carrying out said method recited in Claim 1 (Column 14, lines 1-25).

In regard to Claim 11, Schweitz teaches: (a) computing a procedure-match-criterion for each procedure in the second CFG representation which represents the number of matching blocks between the specified procedure, and a procedure in the first CFG (Column 8, lines 47-67 and Column 9, lines 1-19); (b) matching procedures in the second CFG with the procedure in the first CFG based upon the criteria for procedures in the second CFG (Column 10, lines 30-43).

In regard to Claim 12, Schweitz teaches a medium for carrying out said method recited in Claim 11 (Column 14, lines 1-25).

In regard to Claim 18, Schweitz teaches: (1) providing a server computer in communication with a network. Although Schweitz does not explicitly teach a server, Schweitz does teach transmitting a delta over a network, which obviously has a server in communication with the network (Column 1, lines 58-60); (2) receiving input from a client computer by way of the communications network, the input providing a parameter indicative of a request for upgrading a copy of a first program binary to match a second program binary (Column 1, lines 53-60 and Column 1, lines 25-28); (3) retrieving a delta between a first program binary and the second program binary (Column 4, lines 11-15), wherein computing such a delta comprises steps (a)-(d), where the limitations of steps (a)-(d) have already been addressed in the rejection of Claim 1, and steps (a)-(d) are rejected for the same reasons as Claim 1; (4) generating the patch data structure as a function of the delta (Column 4, lines 29-32).

Claims 19 and 20 contain limitations that have already been addressed in the rejection of Claims 2 and 3, and Claims 19 and 20 are rejected for the same reason as Claims 2 and 3, respectively.

Claim 21 is a system claim that corresponds with method Claim 1, and Claim 21 is rejected for the same reasons as Claim 1, where Schweitz teaches a system for performing said method of Claim 1 (Column 12, lines 29-67 and Column 13, lines 1-6).

In regard to Claim 22, Schweitz teaches a medium having embodied thereon a data structure comprising a delta produced by the system of Claim 21 (Column 14, lines 1-25).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 5, 8, 10, and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schweitz et al. (U.S. Patent Number 6,594,822) in view of "A graph theoretic approach to scene matching", by Laure J. Chipman, The University of Alabama in Huntsville, 1990 (hereinafter Chipman).

In regard to Claim 5, Schweitz teaches the method of Claim 1, and Schweitz further teaches matching blocks across the first and second CFG representations upon blocks being compared and neighborhoods of blocks being compared (Figure 3C). Schweitz does not teach, however, that a local neighborhood of a block is augmented with a random sampling of blocks

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from a substantially large neighborhood of blocks surrounding the block. Chipman, however, does teach computing a clique of nodes in a graph for comparing two graphs, where a clique is an augmented group of blocks surrounding a block (Pages 28-31). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to perform the method of Claim 1, further matching blocks across the first and second CFG representations upon blocks being compared and neighborhoods of blocks being compared, as taught by Schweitz, where a local neighborhood of a block is augmented with a random sampling of blocks from a substantially large neighborhood of blocks surrounding the block, as taught by Chipman, since this allows a comparison of blocks surrounding a given block to be computed, making matching blocks easier and more accurate.

In regard to Claim 8, Schweitz teaches matching blocks across the first and second CFG representations upon blocks being compared (Figure 3C) and detecting outliers (Column 4, lines 29-32), and removing outliers by means of a patch (Column 1, lines 25-28 and Column 4, lines 29-32). Schweitz does not teach computing a neighborhood of each block in the first and second CFG representations by performing a breadth first traversal. Chipman, however, does teach computing neighborhoods of nodes by traversing the CFG (Pages 28-31). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to perform the method of matching blocks across the first and second CFG representations upon blocks being compared, detecting outliers, and removing outliers by means of a patch, as taught by Schweitz, further computing a neighborhood of each block in the first and second CFG representations by performing a breadth first traversal, as taught by Chipman, since this allows a comparison of

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blocks surrounding a given block to be computed, making matching blocks easier and more accurate.

In regard to Claim 10, Schweitz teaches a medium for carrying out said method recited in Claim 8 (Column 14, lines 1-25).

In regard to Claim 13, Schweitz teaches: matching blocks across the first and second CFG representations upon blocks being compared (Figure 3C) and forming labels for blocks and matching blocks in the first and second CFG based upon the label of the blocks (Column 9, lines 1-3). Schweitz does not teach computing successively smaller neighborhoods of each block in the first and second CFG's via breadth first traversals. Chipman, however, does teach an algorithm that assumes a large neighborhood and computes successively smaller neighborhoods in a CFG representation (Pages 28-31). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to perform the method of matching blocks across the first and second CFG representations upon blocks being compared and forming labels for blocks and matching blocks in the first and second CFG based upon the label of the blocks, as taught by Schweitz, further computing successively smaller neighborhoods of each block in the first and second CFG's via breadth first traversals, as taught by Chipman, since this computes a maximal sized perfectly matched neighborhood surrounding the current block.

Claim 14 contains limitations that have already been addressed in the rejection of Claim 5, and Claim 14 is rejected for the same reasons as Claim 5.

In regard to Claim 15, Schweitz teaches a medium for carrying out said method recited in Claim 13 (Column 14, lines 1-25).


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth A Gross whose telephone number is (703) 305-0542. The examiner can normally be reached on Mon-Fri 7:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q Dam can be reached on (703) 305-4552. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KAG



**TUAN DAM
SUPERVISORY PATENT EXAMINER**